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(54) FIELD-EFFECT TRANSISTOR AND MANUFACTURE THEREOF

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a field-effect transistor having little capacitance between a gate electrode and a drain region without increasing the number of processes.

SOLUTION: An N-type drain region 2, a P-type base region 3 and an N⁺ source region 4 are formed in order on an N⁺ semiconductor substrate 1 by an epitaxial growth, on this drain region 2 by a boron ion-implantation and in this base region 3 by an arsenic ion-implantation, then, a groove 5 from the surface of the region 4 to reach the region 2 through the region 3 is formed and after that, with a gate oxide film 6 formed in the groove 5, a gate electrode 12 consisting of a polysilicon film is formed on the place, where excludes the bottom 5a of the groove 5 from the surface of the region 2, through the film 6. Accordingly, when an interlayer insulating film 8 is applied on the substrate 1 subsequently to the formation of the electrode 12, the electrode 12 is not formed on the film 6 on the bottom 5a of the groove 5, but the film 8 is formed on the film 6 and the capacitance between the electrode 12 and the region 2 can be made small as much as a factor of a non-existence of the electrode 12 on the bottom 5a of the groove 5.

